Supporting a Reliable Grid: The Opportunity for Virtual Power Plants in Michigan

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Executive Summary

Michigan's grid is facing three key challenges:

1. **Distribution system reliability and affordability:** An aging distribution grid with high incidents of blackouts
2. **Resource adequacy:** Narrowing capacity availability for resources to meet peak demand
3. **Decarbonization:** Fast-approaching and ambitious clean energy standard of 80% by 2035 and 100% by 2040.

Virtual power plants (VPPs) are aggregations of distributed energy resources (DERs) that can provide utility-scale and utility-grade grid services. According to the Department of Energy, VPPs can be configured to provide a range of benefits, including reliability and resilience, affordability, greenhouse gas emissions reductions, and resource adequacy, among others.[1]

VPPs are positioned to support the challenges Michigan's grid is facing while helping to keep costs down, and are already doing so today in other states.

VPPs can support the ***distribution grid*** in two ways:

1. **Localized grid services**: VPPs provide grid services at the distribution grid level, such as:
    a. *Targeted DER dispatch to maintain safety, reliability, and service quality operating parameters:* Supporting or optimizing existing infrastructure and power quality through targeted dispatch and constraint management across single or multiple circuits.
    b. *Investment avoidance or deferral:* Avoiding or deferring spend on new infrastructure or upgrades through non-wires solutions.
2. **Resilience:** VPPs can provide backup power in the face of blackouts or extreme weather.

VPPs can provide cost-effective ***resource adequacy*****,** mitigating the challenges of rapid load growth in two ways:

1. **Peak reduction**: VPPs help to reduce load or dispatch generation during peak hours as thermal capacity is retired and load grows.
2. **Rapid deployment**: VPPs can deploy in as little as six months to alleviate near-term pressure associated with load growth and long generator interconnection queues.

Lastly, VPPs can ***decarbonize*** power systems in three ways:

1. **Reducing peaker dispatch**: VPPs can shift demand to reduce dispatch from carbon-intensive fossil plants and reduce curtailment of utility-scale renewables.
2. **Unlocking renewable portfolios**: VPPs are often comprised of low- or zero-emission technologies, offering resources that states can leverage to meet their renewable portfolio targets and decarbonization goals.
3. **Enabling electrification:** VPPs can enable more rapid, flexible, managed, cost-effective electrification, supporting decarbonization of homes and businesses.

This brief outlines the ways in which VPPs can support grid reliability, affordability, and decarbonization outcomes, with supporting metrics and case study examples from other states. Michigan utilities, regulators, and legislators have laid the groundwork for fundamental technologies, program structures, and market rules that are part of the foundation for VPPs. This brief concludes with a set of actions that Michigan utilities, regulators, and legislators can take to advance VPPs in the state to support affordable, reliable, decarbonized power for all Michiganders:

- **Michigan utilities and third parties** can apply for grant funding and financing for VPP projects through Michigan's Department of Environment, Great Lakes, and Energy (EGLE) and the Michigan Public Service Commission (MPSC).
- **Michigan investor-owned utilities** can apply to the MPSC's expedited 90-day pilot review program for VPP pilots.
- **The Michigan legislature** can pass VPP legislation requiring Michigan utilities to implement VPP programs to unlock a key source of system capacity and other grid services, while supporting energy affordability, reliability, and decarbonization outcomes.
- **The MPSC** can open up aggregation of residential and small commercial retail customers participating in wholesale markets and unbundle existing retail tariff mechanisms.
- **The MPSC** can open a proceeding to evaluate future advanced metering infrastructure-related planning and procurement strategies to increase transparency and stakeholder engagement, and ensure next generation metering investments have the necessary DER integration capabilities.

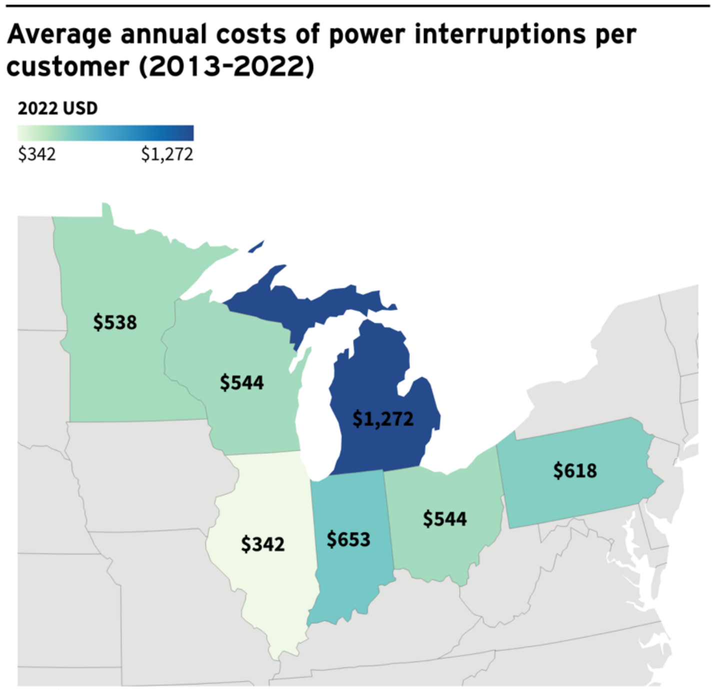
Michigan’s Grid Challenges and the VPP Opportunity

Policymakers and utilities can include VPPs as part of a portfolio of cost-effective solutions to meet near-term and long-term grid challenges. VPPs are uniquely positioned to help address the threats Michigan’s grid faces while helping to keep costs down.

Distribution system reliability and affordability

Power outages are longer and occur more frequently in Michigan than in most other states. **Between 2013 and 2022, power interruptions cost Michigan electricity customers an average of $1,272 per year (in 2022$), approximately $600 higher than the average cost per customer in other Great Lakes states (see Exhibit 1).**[i] This is based on an economic impact of power interruptions faced by residential, commercial, and industrial customers.

Exhibit 1



Costs of power interruptions estimated using Lawrence Berkeley National Laboratory's Interruption Cost Estimate Calculator.

Source: Form EIA-861

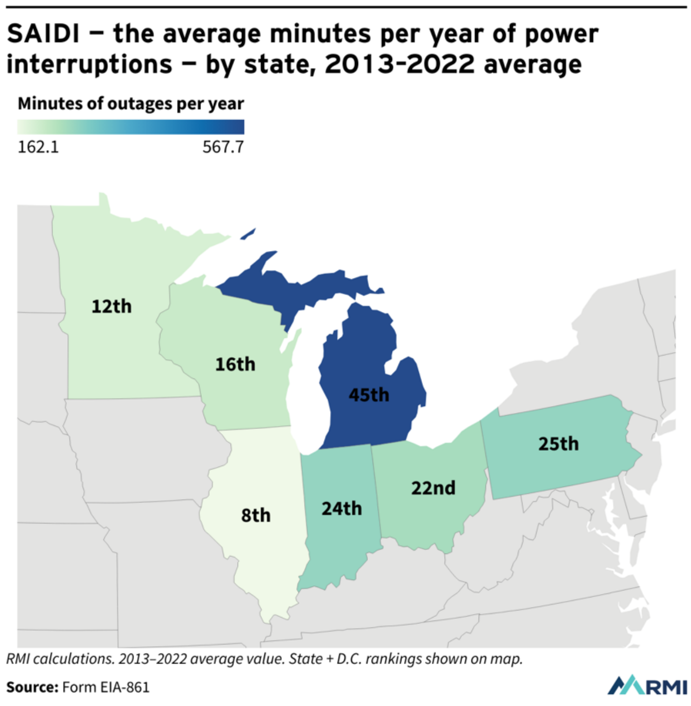
In a report leveraging the same estimation tool as Exhibit 1, power interruptions in 2020 and 2021 in Michigan totaled $4.9 billion in economic impact.[2]

Additionally, Michigan consistently ranks as among the least reliable states as measured by three metrics — the average minutes of power interruptions per year, average number of power interruptions per year, and average restoration time per power interruption. From 2013 to 2022, Michigan ranked 45th in the system average interruption duration index (SAIDI), 27th in the system average interruption frequency index (SAIFI), and 50th in the

[i] For each state, we compute a weighted average SAIDI, SAIFI, and CAIDI statistics, with major event days included, using a utility’s share of customers in the state as weights. We then estimate the cost of power interruptions in each state by inputting the weighted average reliability statistics and the total number of residential and non-residential customers in the state into Lawrence Berkeley National Laboratory’s Interruption Cost Estimator Calculator.

customer average interruption duration index (CAIDI) among all states and the District of Columbia.[ii] See Exhibits 2 through 4:

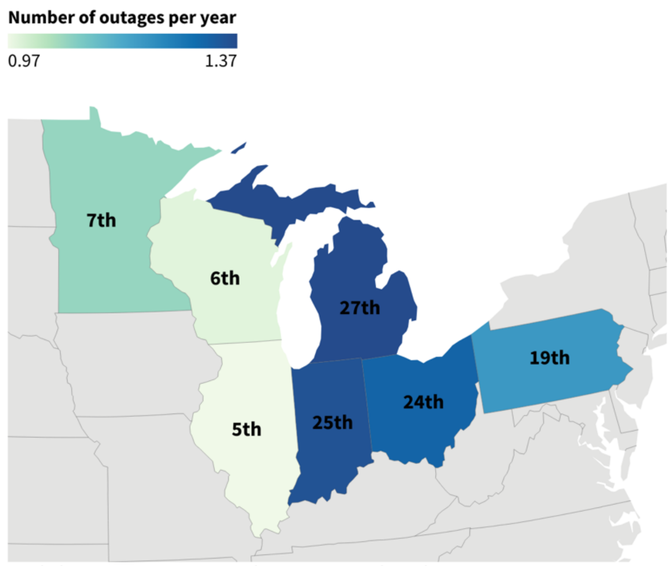
Exhibit 2



[ii] SAIDI represents the total duration of time that the average customer is without power in a given year. SAIFI represents the average number of times a customer experiences a power interruption each year. CAIDI is the average number of minutes it takes to restore non-momentary electric interruptions.

Exhibit 3

SAIFI – the average number of power interruptions per year – by state, 2013-2022 average



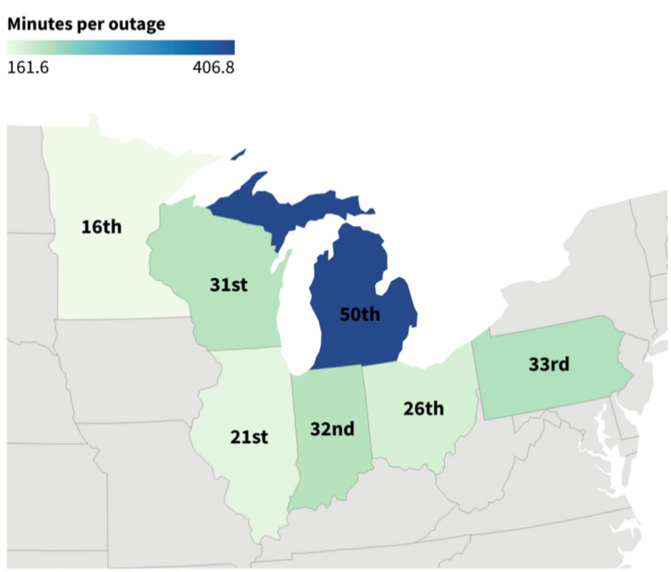
RMI calculations. 2013–2022 average value. State + D.C. rankings shown on map.

Source: Form EIA-861

RMI

Exhibit 4

CAIDI – the average restoration time per power interruption – by state, 2013-2022 average



RMI calculations. 2013–2022 average value. State + D.C. rankings shown on map.

Source: Form EIA-861

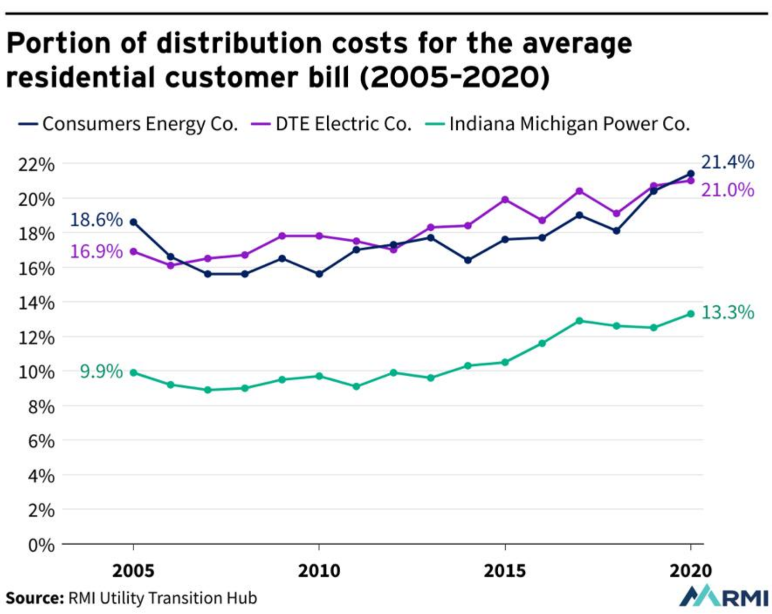
RMI

Additionally, Michigan's distribution system infrastructure is already straining to meet customer demand in some areas, and future load growth and more frequent extreme weather events pose additional challenges. Under a high electrification scenario, DTE Energy, Michigan's largest investor-owned utility (IOU), forecasts that greater than 50% of its customers will be served by substations with loading constraints by 2037.[3] Furthermore, Michigan's aging distribution system infrastructure is at increased risk of failure in the face of more frequent and intense storms fueled by climate change.[4] DTE has already reported that two of the largest storms in its 135-year history have occurred in the past decade.[5]

Investments to update infrastructure and improve reliability have driven rate increases.[6] In 2023, the Michigan Public Service Commission (MPSC) approved a $368 million electric rate increase for DTE Energy, leading to a 6.4% increase in monthly bills for the average residential customer.[7] In January 2025, the MPSC authorized another rate increase of $217 million for DTE Energy for work including upgrading the utility's oldest power lines on their grid, among other reliability improvements. For an average residential customer consuming 500 kWh per month, this will increase the average monthly bill by 4.65%.[8]

Between 2005 and 2020, the portion of distribution costs paid for in the average residential customer bill increased 2.7%, 4.1%, and 3.4% for Consumers Energy, DTE Energy, and Indiana Michigan Power Company, respectively (Exhibit 5).[9]

Exhibit 5



How VPPs can support distribution system reliability and affordability

Michigan can invest in VPPs alongside more traditional grid modernization and grid hardening investments as part of a holistic approach to reliability and resilience. Specifically, VPPs can support the distribution grid in two ways: (1) providing grid services at the distribution grid level and (2) providing resilience benefits in the face of blackouts or extreme weather.

1. **<u>Localized Grid Services</u>: Providing grid services at the distribution grid level**

Providing grid services at the distribution level is becoming increasingly important as distribution system infrastructures ages and as customers adopt DERs at accelerating rates.[10] As the grid becomes more decentralized, the need to balance grid services at the distribution level becomes paramount — control room operators are balancing grid physics not only on the transmission system, but also on the distribution system.[11] VPPs can be a key source of distribution-level grid services. Utilities in 30 states, DC, and Puerto Rico are sourcing distribution services from DERs.[12]

Specifically, VPPs can do this by (a) supporting or optimizing existing infrastructure and power quality through targeted dispatch and constraint management, and (b) avoiding or deferring spend on new infrastructure or upgrades through non-wires solutions.

a. ***Targeted DER dispatch to maintain safety, reliability, and service quality operating parameters: Supporting or optimizing existing infrastructure and power quality through targeted dispatch and constraint management across single or multiple circuits.***

   VPPs are comprised of decentralized assets, making them flexible to be sited and dispatched on localized sections of the distribution grid according to grid needs. This means DERs can be dispatched to address grid needs at the level of a single circuit nearing local limitations or on multiple circuits during times of system-wide stress.

   Example: The New York Public Service Commission established the Value of Distributed Energy Resources (VDER) mechanism to compensate grid services from DERs.[13] One component of VDER is the locational system relief value, a locational adder that compensates projects located on utility-specified substations on their grids where DERs can provide added benefits.[14] This adder values the targeted dispatchability and constraint management benefit of DERs and VPPs to help alleviate constraints on utility distribution grids.

b. ***Investment avoidance or deferral: Avoiding or deferring spend on new infrastructure or upgrades through non-wires solutions***

   Non-wires solutions are the use of technologies, typically aggregations of DERs, in locations to avoid or defer investment in new transmission and distribution infrastructure.[15] By leveraging VPPs to provide supply-side grid services such as energy, capacity, and ancillary services or demand-side flexibility and management, utilities can avoid or defer expensive investments in traditional infrastructure and reduce costs for ratepayers.

   Example: AES Indiana and Camus Energy conducted an electric vehicle (EV) managed charging analysis. The analysis showed that with accurate EV visibility on the distribution system and use of managed charging, AES Indiana can defer 87% of expected feeder upgrades for an average of 5.8 years and 66% of transformer upgrades for an average of 8.4 years. The deferral of equipment upgrades unlocks $75 million per year in capital flexibility. This means that with each new EV added to the grid, AES Indiana gains $1,275 per year to reinvest in broader grid reliability and affordability improvements.[16]

   Example: The Spokane Connected Communities Project will avoid a 55 MW peak distribution substation in Spokane, Washington, through retrofitting 125 existing buildings with energy efficiency measures and DERs (rooftop PV, battery storage systems, thermal storage systems, and EV charging infrastructure) in a location-specific VPP.[17]

2. **Resilience: Providing resilience benefits in the face of blackouts or extreme weather**

VPPs can be comprised of technologies that can provide backup power (e.g., battery storage systems, electric vehicles with bidirectional charging capabilities). By improving the economics of residential and commercial battery backup, VPPs can provide this resilience benefit and support customers facing blackouts from a range of causes, including outages from aging distribution infrastructure or extreme weather events.

Example: Customers in Puerto Rico have suffered from ongoing blackouts since Hurricanes Irma and Maria in 2017, necessitating large investments in DERs to support the grid and reduce reliance on expensive, imported fossil fuels for traditional diesel-powered backup generators.[18] Sunrun has installed over 2,000 batteries in its PowerOn Puerto Rico program, a VPP program participating in LUMA's Battery Emergency Demand Response Program. The fleet of 2,000 batteries provides up to 15 MWh of energy to support the grid.[19] The batteries have been called upon dozens of times since Fall 2023 when blackouts were imminent — providing resilient energy sources to customers.[20]

Resource adequacy

Aging coal plants are retiring at a rapid pace while projected load growth from data centers, electrification, and clean energy manufacturing could increase peak demand. Over the past five years, Michigan utilities have retired 3.8 GW of coal, and utilities plan to retire the entire coal fleet — 6.2 GW — by 2032.[21] Meanwhile, over $11 billion in new EV and battery manufacturing investment has been announced in Michigan following the passing of the Inflation Reduction Act in 2022.[22]

These resource retirement and load growth factors are leading to potential resource adequacy risk for the MISO North/Central region without more rapid deployment of new, clean resources with appropriate resource accreditation.[23] **In planning year 2025–26, MISO is projecting a potential summer capacity deficit of 1 to 3.7 GW in this region, which could expand in the years to follow.[24]** This prospect could change with more rapid additions of resources already in the interconnection queue waiting to connect to the grid.

How VPPs can support resource adequacy

VPPs can provide cost-effective ***resource adequacy,*** mitigating some of the challenges of rapid load growth in two ways:[25]

1. **Peak reduction**: Reducing load or dispatching generation during peak hours as thermal capacity is retired and load grows.
2. **Rapid deployment**: Deploying in as little as six months to alleviate near-term pressures associated with load growth and long generator interconnection queues.

Research from The Brattle Group finds that VPPs can provide resource adequacy at a net utility system cost that is roughly 40% of that of a gas peaker plant. Based on these findings, 60 GW of VPP deployment can save utilities across the United States between $15 and $35 billion over the next decade in capacity investment.[26] Moreover, VPPs offer a fast-to-deploy solution — often in one year or less — to meet the growing resource adequacy needs of regions across the country.[27]

Example: National Grid's ConnectedSolutions VPP in Massachusetts includes batteries, smart thermostats, and demand response. **The ConnectedSolutions program has a total of 227 MW enrolled from over 95,000 customers available to reduce peak load.** This program only took four months to operationalize.[iii,28]

Decarbonization

Michigan has set ambitious clean energy targets. In 2020, Governor Whitmer signed an executive order directing the EGLE to develop the Michigan Healthy Climate Plan, which charts a pathway for Michigan to achieve 100%

[iii] National Grid operates the program alongside Eversource and the Cape Light Compact. Customer and megawatt enrollment numbers represent Summer 2023 performance and include all Massachusetts ConnectedSolutions participants, not just National Grid participants.

carbon neutrality by 2050.[29] In 2023, Michigan signed into law Public Act 235, which established clean energy standards of 80% by 2035 and 100% by 2040.[30]

Achieving these objectives will require utilities to evolve their investments and operations, rapidly phasing out fossil fuel generation while ensuring adequate capacity to meet future demand driven by electrification and new manufacturing.

How VPPs can support decarbonization

VPPs can decarbonize power systems in three ways:[iv]

1. **Reducing peaker dispatch**: VPPs can shift demand to reduce dispatch from carbon-intensive fossil plants and reduce curtailment of utility-scale renewables.[31]
2. **Unlocking renewable portfolios**: VPPs are often comprised of low- or zero-emission technologies, offering resources states can leverage to meet their renewable portfolio targets and decarbonization goals.
3. **Enabling electrification:** VPPs can enable more rapid, flexible, managed, cost-effective electrification, supporting decarbonization of homes and businesses.

According to RMI's *Power* Shift report, nationwide, VPPs could avoid between 12 and 28 million tons of carbon dioxide emissions by 2035, or 2% to 4% of projected US power sector emissions. In a modeled case study in the Mountain West, a VPP-enabled resource portfolio can achieve a 20% reduction in net generation costs and a 7% reduction in emissions, compared to a baseline portfolio without VPPs.[32]

Example: Portland General Electric (PGE) published its distribution plan in December 2024, which includes plans for 2 GW of VPP-enabled resources by 2030, targeting 25% peak usage offset. PGE notes in the resource target section, "As we advance to a 100 percent clean energy supply, we are often replacing base-loaded thermal resources with variable energy resources like wind and solar. As a result, we identified that in order to achieve this decarbonized future, we would need to find new sources of flexibility for the supply portfolio."[33]

For more examples of VPPs providing these services, see the *Virtual Power Plant Flipbook* and the *2025 Update of the Pathways to Commercial Liftoff for VPPs*.

Michigan's VPP Readiness

There are a few key steps Michigan has already taken that makes the state a ripe market for VPPs:

1. DER deployment momentum

In order to aggregate distributed energy resources into a VPP, the resources need to be deployed in the first place. The more DERs the state has deployed, the more the state can benefit from aggregating those DERs into a VPP to provide services to the grid and its customers.

Michigan status: Home to the automotive industry, Michigan is a leader in EV deployment and development, with 50,300 EVs registered in 2023, representing a 64% compound annual growth rate since 2016.[34] While EVs are booming in Michigan, battery deployment has room to grow — according to a December 2024 report from the MPSC, approximately 3,900 customers in DTE Energy, Consumers Energy, and Indiana Michigan service territories have battery storage, totaling storage capacity of 28.6 MW.[35] The 2017 *State of Michigan Demand Response Potential Study* projected that by 2037, Michigan could have 807 MW of behind-the-meter batteries.[36] Moreover, during the COVID-19 pandemic, Consumers Energy, Uplight, and Google partnered to provide free smart thermostats to up to 100,000 households with demand response pre-enrollment.[37] Finally, in January 2025,

[iv] RMI's *Power Shift* report discusses VPP decarbonization pathways and illustrates cost and emission savings through a case study analysis: https://rmi.org/insight/power-shift/.

the DOE announced a conditional loan guarantee of up to $5.23 billion for Consumers Energy for investments through 2031 for solar, wind, batteries, and VPP projects.[38]

2. Demand response programs and distributed generation

Demand response programs are part of the foundation of VPPs, demonstrating the tenet of aggregating demand-side load to provide grid services and alleviate grid constraints. Additionally, a statewide focus on distributed generation (DG) participation can help align utility incentives to leverage DERs in their resource stack.

Michigan status: Michigan has had strong enrollment in demand response programs. In 2023, according to the EIA, 16% of residential customers for Consumers, DTE Energy, and Indiana Michigan were enrolled in demand response programs, while only 0.7% of non-residential customers enrolled. The potential peak savings from those three utilities totals 1.1 GW, and 60% of that potential comes from non-residential customers due to the large commercial and industrial loads in the state.[39]

- Consumers Energy is utilizing its demand response portfolio to achieve its objectives of ending coal use by 2025 and reaching net-zero carbon emissions by 2040. Looking ahead, Consumers Energy "believes [demand response] has the potential to function as a reliable, robust 'virtual power plant' that can be called upon to satisfy Michigan's electric needs in a clean, sustainable way."[40]
- DTE Energy's demand response programs can reduce peak demand by up to 904 MW, limiting the need for additional capacity and lowering energy costs for customers.[41]

Finally, in 2023, Public Act 235 increased the soft cap on the amount of DG that a utility must allow from 1% to 10% of the utility's in-state peak load for the five preceding years, opening up more access for DG to provide capacity to support the grid. According to a December 2024 report by the MPSC, there is 177 MW of distributed generation nameplate capacity in Consumers, DTE Energy, and Indiana Michigan programs as of 2023. On average, the three utilities have 84.5% available of their allocated <20 kW DG cap, and 95.3% available of their allocated 20–550 kW DG cap, though they could voluntarily choose to leverage more DG than the soft cap.[42]

3. Proactive and supportive decision makers

State energy decision makers hold the keys to advancing the state's VPP investments. A supportive public service commission, legislature, governor, or state energy office is often the changemaker with the power to make large strides in a state's decarbonization and distributed energy transition.

Michigan status: The MPSC has prioritized improving distribution system resilience and affordability through a number of actions, including evaluating utility distribution planning processes, launching a comprehensive third-party audit of DTE Energy's and Consumers Energy's distribution systems, and convening a Financial Incentives and Disincentives work group, among others.[43]

Looking ahead, the MPSC is taking several near-term actions related to distribution system reliability, as detailed in an order from September 2024.[44] Following the publication of the audit's results, the MPSC is directing DTE Energy and Consumers Energy to address response time to downed wires, among other reliability and maintenance compliance issues.[45] Additionally, the MPSC is directing the Financial Incentives and Disincentives work group to evaluate which metrics are appropriate for DERs, with the eventual goal of integrating the metrics into future distribution plans.[46] Moreover, in January 2025, MPSC finalized a distribution plan straw proposal to facilitate a standard, more transparent approach to utility distribution plan filings in the state.[47]

Finally, the legislature, governor, and state energy office (EGLE) have advanced decarbonization, resilience, DERs, and affordability through actions highlighted in other sections of this brief.

4. State climate goals

If a state has a climate goal or emission reduction target, VPPs can contribute to those emission reductions since they are comprised of low- or zero-emission technologies or loads.

Michigan status: As noted above, in 2023 Michigan established a clean energy standard of 80% by 2035 and 100% by 2040.

5. Access to wholesale markets

Access to an organized wholesale market such as an independent system operator or regional transmission organization, gives states more options and existing structures for VPPs to plug into to provide their value to the larger grid, region, and customers.

Michigan status: Michigan is in two wholesale markets, MISO and PJM. In December 2022, the MPSC partially lifted a decade-long ban on demand response aggregation participating in wholesale markets, opening up participation to commercial and industrial customers with a minimum enrolled load of 1 MW.[48] The MPSC is in the process of evaluating demand response and aggregation opportunities through its Demand Response Aggregation Workgroup.[49]

6. Investments in real-time distribution grid visibility

Finally, investments in technology that improve real-time distribution grid visibility and edge-computing capabilities can enable a more accurate understanding of distribution grid health and behind-the-meter assets and equip utilities and third parties to operate DERs based on local grid conditions.

Michigan status: Michigan utilities have acknowledged the need for advanced metering infrastructure (AMI) and other technology investments to improve distribution system visibility in order to better integrate DERs, increase reliability, and deliver more benefits to Michiganders. In DTE Energy's 2023 distribution grid plan, they are prioritizing future AMI capabilities to address reliability improvements for power status information, resilience and fault tolerance, and flexibility with various tariffs, as well as supporting new use cases like DERs, vehicle-to-grid integration, storage, and more.[50]

Consumers Energy is also prioritizing investments in system visibility technology including AMI. Its 2023 Electric Distribution Infrastructure Investment Plan notes the importance of these technologies to improving reliability and integrating DERs.[51] And its 2024 rate case filings noted increased needs for higher levels of "granularity, fidelity, and speed of data and information to drive operational optimization…as more distributed resources are connected at the grid edge and as supply and demand become more dynamic."[52] Consumers also notes a continuation of work with MPSC Staff to evaluate value-focused AMI metrics and elements in future rate case filings.[53]

What's Next: Near-Term Actions for Michigan Decision Makers to Scale VPPs

The *VPP Policy Principles* offer a framework to identify common policy-related challenges VPPs face and north star policy outcomes Michigan decision makers can use to leverage VPPs in the near term:

Advance policies to expand beneficial DER adoption by diverse end-users

As noted above, accelerating the deployment of DERs is the essential first step in scaling VPPs to ensure customers and the grid can access those benefits.

- **Near-term action: Utilities and third parties can apply for grant funding and financing to deploy DERs — like VPPs — through Michigan's EGLE, the Michigan Economic Development Corporation (MEDC), or the Michigan Climate Investment Accelerator.** Eligible projects include clean energy deployment projects that advance Michigan toward its carbon neutrality and economic development goals set forth in the Michigan Healthy Climate Plan. Michigan priorities include deploying EV chargers, energy storage, heat pumps, retrofits, and other clean energy technologies — all components of VPPs; reducing energy burden; and supporting environmental justice.[54] Large projects over $100 million are best suited to apply through the joint EGLE/MEDC funding opportunity, while smaller projects are encouraged to pursue financing through the state's Accelerator program.[55]

Emerging options such as the distributed capacity procurement (DCP) model have been proposed as a means to accelerate DER deployment. Under the DCP, the utility leads the planning, procurement, siting, and dispatch of DERs. While this model could accelerate DER deployment, it has opened up discussions about unfair competition and potential cost impacts. This model is being explored in Minnesota, where Xcel proposed procuring 40 1,000 MW of DERs via the DCP model.[56,v]

Utilize best practice in program design

Michigan utilities do not need to start from scratch when designing and deploying VPPs. The *VPP Flipbook* details 15 case studies of VPPs around the United States, totaling over 1.5 GW of capacity from 3.9 million enrolled customers.

- **Near-term action: Michigan investor-owned utilities can apply for VPP pilot funding and quickly deploy VPP programs through the MPSC's expedited 90-day pilot review program.** The program is part of the MI Power Grid Initiative, which seeks to maximize the benefits of the transition to clean DERs. Each IOU is allowed a maximum annual spending cap — up to $10 million for Consumers Energy and DTE Energy — and is encouraged to leverage outside funding, which will be additive to the cap.[57] This is a unique opportunity for utilities to quickly pilot VPPs, building on the successes of their existing demand response and DER programs, partnering with third-party aggregators, and iterate based on pilot learnings. Although there have been no VPP pilot applications to the expedited review program yet, one example that could have leveraged this funding is DTE Energy's set of pilots investigating how demand response and DERs can serve as non-wire solutions to provide short- and long-term load relief for capacity-constrained T&D infrastructure. These pilots could be expanded with testing various compensation structures for customers and methods to transition pilots into longer-term VPP programs.[58]

Enable VPP participation in wholesale and retail markets and value stacking, and encourage participation of competitive hardware and service providers

Allowing VPPs to compete fairly in both wholesale and retail markets opens up the value streams and benefits of VPPs to more customers. Moreover, enabling third-party aggregation of demand response and DERs can support competition and drive down costs for the grid and customers.

- **Near-term action 1: The Michigan legislature can pass VPP legislation requiring Michigan utilities to implement VPP programs to unlock a key source of system capacity and other grid services, while supporting energy affordability, reliability, and decarbonization outcomes.** Decision makers can look to Colorado for inspiration, where the Colorado legislature passed SB 24-218 in June 2024 requiring utilities to upgrade the distribution system and implement a VPP program by February 2025, with the option to deliver the program with third-party aggregators.[59] Similarly, in April 2024 the Maryland legislature passed the Distributed Renewable Integration and Vehicle Electrification (DRIVE) Act, requiring investor-owned utilities to submit vehicle-to-grid charging plans by April 2025 and VPP plans by July 2025 with compensation mechanisms for customers and third-party aggregators.[60]
- **Near-term action 2: The MPSC can open up aggregation of residential and small commercial retail customers participating in wholesale markets and unbundle existing retail tariff mechanisms.** The MPSC can build on the progress of Case U-21099 and fully lift the partial ban on aggregators of retail customers (ARCs), allowing the aggregation of residential and smaller C&I customers with appropriate customer protections. Moreover, some Michigan utility demand response tariffs and programs bundle

[v] The DOE's *Pathways to Commercial Liftoff: 2025 Update* Report recommends on page 36, footnote 50, assessing and monitoring impacts on competition and customer bills as utilities explore various DER procurement models. https://liftoff.energy.gov/wp-content/uploads/2025/01/LIFTOFF_DOE_VirtualPowerPlants2025Update.pdf

wholesale and retail products together, potentially limiting competition.[61] Completely lifting the ARC ban and unbundling grid service products would enable the participation of competitive hardware and service providers, providing access to the cost savings and reliability benefits of VPPs to more Michiganders.

Use open-source software and make grid data available

Investing in real-time distribution grid visibility and edge-computing and opening up access to relevant grid- and customer-related data to third parties, with appropriate customer protections, enables VPPs to provide targeted and accurate value to the distribution grid and customers.

- **Near-term action: The MPSC can open a proceeding to evaluate future AMI-related planning and procurement strategies to increase transparency and stakeholder engagement and ensure next generation metering investments have the necessary DER integration capabilities.** In January 2025, the administrative law judge in Consumers' 2024 rate case (Case No. U-21585) recommended to the MPSC to "open a collaborative docket or technical conference to develop guidelines for next generation AMI meter purchasing…[and] consider competitive bidding, and necessary desirable functionality for the advanced meters, particularly as it relates to the existing grid, and to functionality for DER and renewable energy expansion going forward."[62] Similar proceedings in Connecticut and elsewhere have helped shape and future-proof AMI investments.[63] The metering technology that utilities adopt will directly impact Michigan's ability to integrate VPPs and manage a two-way distribution grid.

Michigan utilities, regulators, and legislators can consider the above actions, among others, to deliver benefits to more Michiganders by harnessing the reliability, affordability, and flexibility of virtual power plants.

Endnotes

[1] Jennifer Downing et al., *Pathways to Commercial Liftoff: Virtual Power Plants,* US Department of Energy, 2023, https://liftoff.energy.gov/wp-content/uploads/2023/10/LIFTOFF_DOE_VVP_10062023_v4.pdf.
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